REMARKS

Claims 1-40 are pending in this application.

Rejections under 35 U.S.C. § 102

Claims 1-40 were rejected under 35 U.S.C. 102(e) as being anticipated by Jain et al. (U.S. Patent Application No. 5,675,742)(hereinafter referred to as "Jain"). This rejection is respectfully traversed. Applicant submits that the cited prior art does not disclose or suggest the claimed inventions for at least the reasons stated below.

To support a section 102 rejection, every feature of the claimed inventions must be shown in the reference. (See MPEP 2131) In addition, the identical invention must be shown in as complete detail as is contained in the claim. (See MPEP 2131). Applicant respectfully submits that the cited prior art does not disclose or suggest every feature of the claimed invention and the cited prior art does not show the identical invention in as complete as detail as contained in the claim.

With respect to claim 1, Applicant respectfully submits that, at the very least, the cited portions of Jain do not disclose or suggest reducing the data transfer in direct correlation to the level of data transfer congestion. Applicant respectfully submits that Jain uses a specific threshold of congestion to implement congestion control. The Office is respectfully directed to column 11 lines 15 through 27 of Jain which states in pertinent part:

> After examining a predetermined number of consecutively received flags 21, equal in number to the current size of the source window, the source 7 calculates the fraction of flags which are conditioned (step 71) and then tests to <u>determine if the calculated fraction equals or exceeds a flag threshold (step 73), which in one specific embodiment is 0.5</u>. Of course, other thresholds may be selected depending upon desired performance goals. If the calculated fraction equals or exceeds the flag threshold, the signal filter algorithm 29 requests a decrease in the window size by branching to step 75 of the load adjustment algorithm 31. Otherwise, the

> filter algorithm 29 authorizes the window size to increase by branching to step 77 of the load adjustment algorithm 31. (Emphasis added)

Therefore, Jain discloses using a specific threshold at which the reduction of the window size is implemented. Jain further proposes a specific decrease of the window size. (See Jain column 11, line 34) where an amount of window size decrease is the same whether the calculated fraction of flags is a little above the specific threshold (not much congestion) or a lot above the specific threshold (large amount of congestion). As a result, Applicant respectfully submits that Jain does not disclose or suggest reducing the data transfer in direct correlation to the level of data transfer congestion.

Applicant further respectfully submits that independent claims 13, 26, and 39 include the features of setting a probability factor that is correlated to the capacity level and generating a random value which is indicative of whether packets being sent by the sending switch are to be marked with a congestion indicator. Applicant respectfully submits that Jain uses a specific queue length to determine whether a flag is set and does not set a probability factor that is correlated to the capacity level. In addition, Applicant respectfully submits that the cited portions of Jain do not disclose or suggest generating a random number for use in marking data. The Office is respectfully directed to column 8 lines 1 through 7 of Jain which states in pertinent part:

> Using the monitored queue length, the router 9 executes the filter function 25 according to which it calculates an average queue length and then determines whether the average queue length equals or exceeds <u>a preselected length</u>. That is, after processing the filter function 25, the router has a value which is less sensitive to transitory peaks in queue length. (Emphasis added)

As can be seen, Jain discloses usage of a <u>particular preselected length</u> of the average queue length at which (or above which) the flag is set. Jain therefore does not disclose using a probability factor and Jain does not disclose or suggest using a randomly generated number to

mark data. In fact, the Office is further respectfully directed to column 8 lines 35 through 55 of Jain which states in pertinent part:

> Next, according to step 41 of the filter function 25, the router 9 tests the average queue length to determine whether it is greater than a preselected length. It has been determined that, regardless of whether the inter-arrival time distributions and the service time distributions for the router 9 are completely deterministic or exponential, the knee occurs when average queue length is equal to one. For other distributions, this is approximately true. Therefore, **a preselected length equal to one** is used in one specific embodiment. If the average queue length is greater than one but less than or equal to an override level, the router 9 moves along branch 43 and invokes the feedback selection function 27 which identifies specific sources-destination pairs whose packet transmission rates through the router 9 (i.e. throughputs) should be reduced and sets the congestion avoidance flag 21 in **all packets** 13 associated with those S-D pairs. On the other hand, if the average queue length is less than or equal to one, the router 9 does not invoke the feedback selection function 27 and, instead, moves along branch 45 to step 47 in which the router allows all packets 13 to pass through without disturbing their flags 21. (Emphasis added)

Therefore, Jain is disclosing one particular preselected length which, in the above cited section, is one. In addition, Jain discloses that, when above the particular average queue length, all packets associated with the S-D pairs are flagged. Therefore, Jain also fails to disclose randomly generating a value where the value is indicative of whether the data packet sent by the sending switch is to be marked with a congestion indicator. Consequently, Applicant respectfully submits that Jain does not disclose all features of the claimed inventions as is required in a section 102 rejection. As a result, Applicant respectfully submits that independent claims 1, 13, 26, and 39 are allowable. In addition, Applicant respectfully submits that the dependent claims are allowable for at least the same reasons as the independent claims. Therefore, Applicant respectfully requests that the section 102 rejections be withdrawn with respect to claims 1-40.

Applicant respectfully traverses the Office's arguments on page 16 of the final Office Action. The Office cites columns 5, lines 44-67, column 6, lines 1-33 and 56-65 and column

8, lines 1-7, column 8, lines 8-55, column 9, lines 42-67, column 10, lines 1-18 and column 11, lines 57-67 and asserts that the Examiner cited portions of the reference teaches reducing data transfer in direct correlation to load. The Office further asserts that in response to the feedback information of how much traffic is going through the routers, the router adjusts its throughput accordingly and adapts its service of packets based on load. Applicant respectfully submits that the cited portions of Jain do not disclose reducing the data transfer in direct correlation to the level of data transfer congestion. In addition, Applicant respectfully submits that Jain discloses the utilization of certain different equations for reducing the window size. In a first equation in column 11, line 34, Jain discloses a decrease where when the window is larger the decrease of the window is larger. In the second equation in column 11, line 64, Jain appears to disclose usage of a linear equation where a window is decreased by a fixed constant per time period. In addition, Applicant respectfully submits that Jain discloses usage of a delay interval where data transfer rates are not being modified. Therefore, Applicant respectfully submits that Jain does not disclose a method of decreasing the data transfer rate in direct correlation to data transfer congestion.

The Office further asserts that column 8, lines 8-55 discloses the teaching of calculating an average queue length which correlates to capacity level and increases as the capacity increases and decreases as the capacity decreases. The Office then goes on to suggest that the average queue length is a probability factor that adjusts as load changes over different periods of time. The Office further suggests that the average queue length is calculated based on previous and present cycles to obtain a probable future load of the router. Applicant respectfully submits that the cited portions of Jain do not disclose or suggest either setting a probability factor or randomly marking data. Applicant respectfully submits that queue length is defined by Jain as being equal to the number of packets which are stored in the buffers waiting to be processed by the router plus any packet which is being processed.

Further according to Jain, the average of the queue length is calculated by an adaptive averaging scheme which is described as follows in column 8, lines 8-34 of Jain which states in pertinent part:

> In accordance with one aspect of the invention, the router 9 calculates the average of the queue length by using what is referred to as an adaptive averaging scheme. That is, the beginning of the time interval over which the average is calculated advances as a function of the past packet activity at the router. Typically, transmissions of packets by end systems 7 occur in bursts and affect queue length at a router 9 in a manner such as is illustrated in FIG. 6. The times t_1 and t_2, which are designated as regeneration points, represent the points at which a packet 13 arrives at an idle router 9. The time between the regeneration points represents a cycle in the router's traffic and consists of a busy period followed by an idle period. The busy period is that period of time during which at least one packet is being served by the buffer 19. The idle period, on the other hand, is that period of time during which no packets are being served by the router 9. The averaging interval starts at the regeneration point for the previous cycle and ends at the current time in the current cycle. As the current cycle ends and a new cycle begins, the start of the averaging interval is shifted up one full cycle. In this way, the averaging interval always includes activity from the completed previous cycle as well as a portion of the current cycle. In executing step 37 of the filter function 25, the router 9 establishes the averaging interval in accordance with this method, and then, in step 39 the router 9 uses the averaging interval to calculate the average queue length.

Therefore, Applicant respectfully submits that according to Jain, the average queue length is the queue length averaged over an average time interval. Therefore, Applicant respectfully submits that column 8, lines 8-55 (as cited on this page and on page 4 of the response) does not disclose or suggest that the average queue length is utilized as a probability factor or used to randomly mark packets. As a result, Applicant respectfully submits that Jain does not disclose or suggest randomly marking data or using a probability factor as determined by the how full the input buffer is.

The Office has stated that the Applicant has cited only a small portion of Jain to support the arguments contained in the previous response to the Office Action. Applicant points out that the portions of Jain that were cited by the Applicant (e.g., column 8 lines 1-7

and lines 35 through 55) were sections originally cited by the Office (see, e.g., pages 2, 4, 11, 15 of the first Office Action) and which Applicant considers to contain subject matter contradictory to the assumptions and suggestions made by the Office. Indeed, Applicant notes that the Office cites column 8, lines 8-55 in the final Office Action of which lines 35-55 is a significant portion.

Another portion of Jain cited by the Office to support the above assertions and suggestions regarding marking the data using probability include column 6, lines 44-65 of Jain which states as follows:

> ...total number of packets 13 it receives per unit time from all end systems sending traffic through the router 9, and it determines when that load exceeds the estimated capacity level, beyond which the likelihood of congestion may increase. When the router 9 detects that its load exceeds the estimated capacity level, it calculates a fair share of the estimated capacity for each stream of traffic passing through the router 9 and then conditions the flag 21 on each packet associated with any stream of traffic that accounts for more than the calculated fair share of the estimated capacity for that stream. The flags 21 on all other packets 13 passing through the router 9 are permitted to pass undisturbed.
>
> In one embodiment, the destination 7 transfers the flag 21 from each incoming packet 13 to the return message carrying the acknowledgment which it then sends back to the source. In this way, the information placed in the flag 21 by the router 9 is fed back to the source 7 which can then act upon that information. The sources 7, in response, interpret the information presented in the flags 21 of incoming return messages carrying the acknowledgements and adjust their throughputs in accordance with a control algorithm described below in connection with FIG. 5.

This portion of Jain generically states that the flag is set when a share of the estimated capacity for each stream of traffic is exceeded. Applicant respectfully submits that this cited portion of Jain does not disclose or suggest randomly marking data or using a probability factor.

The Office further cites on page 17, column 7, lines 1-16,

> It may, however, comprise more than one bit if, for example, it is desirable to use the flag 21 to convey more information about the operating point of the router 9 than can be conveyed using a single bit.
>
> As shown in FIG. 4, the feedback algorithm, which is performed by the routers 9, includes three separate functions, namely, a detection function 23, a filter function 25 and a feedback selection function 27. The detection function 23 provides an indication of overload on the router 9. The filtering function 25 determines when the overload has lasted long enough to justify corrective action. And the feedback selection function 27 identifies the end systems 7 which are responsible for the overload condition and enables the router 9 to set the congestion avoidance flag 21 in packets 13 being transmitted by those end systems 7, thereby requesting them to reduce their load demands.

Applicant respectfully submits that this portion of Jain generally discusses detection of overload on the router and generically discussing setting the flag. Again, Applicant respectfully submits that a section of Jain cited by the Office does not disclose or suggest randomly marking data or using probability factor. Therefore, Applicant respectfully submit that the cited portions of Jain do not disclose or suggest the claimed inventions. In addition, Applicant submits again that that "the identical invention must be shown in as complete detail as is contained in the ... claim." (See MPEP 2131). Applicant respectfully submits that Jain does not show the claimed invention in as complete a detail as contained in the claims.

In addition, Applicant further respectfully submits that the dependent claims are allowable for at least the same reasons as the independent claims. Therefore, Applicant respectfully submits that Jain does not disclose or suggest all of the features of the claimed invention to support a section 102 rejection. For all of the foregoing reasons, Applicant respectfully request that the section 102 rejection of claims 1-40 be withdrawn.

In view of the foregoing, Applicant respectfully submits that claims 1-40 are in condition for allowance. Accordingly, a notice of allowance is respectfully requested. In the event a telephone conversation would expedite the prosecution of this application, the Examiner may reach the undersigned at **(408) 749-6900 ext. 6927**. If any additional fees are

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due in connection with the filing of this paper, then the Commissioner is authorized to charge such fees to Deposit Account No. 50-0805 (Order No. ADAPP135).

Respectfully submitted,
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